

What is Claimed is:

1. A snowmobile, comprising:

    a frame;

    an engine;

    an endless belt drive system;

    an air intake system for said engine; and

    said frame having a forward portion and an aft portion;

    wherein said engine being mounted to said forward portion, said belt

drive system being mounted to said aft portion and being operatively

connected to said engine;

    said engine being a turbocharged four-stroke type engine.

2. A snowmobile as in claim 1, wherein said engine includes at least one cylinder, each cylinder having a respective combustion chamber, said engine having an air inlet capable of communicating with each of said combustion chambers and an exhaust outlet capable of communicating with each of said combustion chambers;

    said air intake system comprising;

    an air passage communicated with the atmosphere, said air passage being a substantially hollow enclosed structure,

        a turbocharger connected to said air passage such that air from said air passage may enter said turbocharger, said turbocharger communicating with said exhaust outlet and being constructed and arranged such that a flow of exhaust gases from said exhaust outlet through said turbocharger affects a pressurization of air therein.

3. A snowmobile as in claim 1, further comprising a heat exchanger formed of a heat conductive material connected to said turbocharger such that the pressurized air from said turbocharger may enter therein, said heat exchanger being constructed and arranged such that heat from the pressurized air is dissipated therefrom to the atmosphere via said heat conductive material.

4. A snowmobile as in claim 1, further comprising a plenum connected to said heat exchanger such that air from said heat exchanger may enter said plenum, said plenum further connected to said air inlet and being constructed and arranged such that cyclically pressurized amplitude of the air from said turbocharger via said heat exchanger may collect therein such that the pressurization amplitude of the air upon exiting the plenum and entering said air inlet is substantially constant.

5. A snowmobile as in claim 1, wherein said air passage is positioned forward of said engine in spaced relation thereto in order to prevent significant heating of air within said air passage.

6. A snowmobile as in claim 1, wherein said air passage is positioned aft of said engine in spaced relation thereto in order to prevent significant heating of air within said air passage.

7. A snowmobile as in claim 1, wherein said heat exchanger is an intercooler, said intercooler including an intake portion and an outlet portion,

said intake and outlet portions connected by a series of spaced hollow conduits.

8. A snowmobile as in claim 7, wherein said intercooler is positioned proximate said forward portion of said frame, said intercooler being arranged generally normally to the oncoming air flow from the atmosphere produced by movement of said snowmobile therethrough, such that said conduits are directly exposed to the oncoming air.

9. A snowmobile as in claim 7, wherein said intercooler is positioned proximate said forward portion of said frame, said intercooler being arranged generally parallel to the oncoming air flow from the atmosphere produced by movement of said snowmobile therethrough, said intercooler being positioned such that the air is directed across one surface thereof, thereby entraining air from an opposite side through spaces between said conduits.

10. A snowmobile as in claim 7, wherein said intercooler is positioned proximate said forward portion of said frame, said intercooler being arranged at an angle to the oncoming air flow from the atmosphere produced by movement of said snowmobile therethrough, said intercooler being positioned such that the air is directed across one surface thereof, thereby entraining air from an opposite side through spaces between said conduits.

11. A snowmobile as in claim 2, wherein said air passage communicates with said turbocharger via a first duct member and said turbocharger communicates with said heat exchanger via a second duct member.

12. A snowmobile as in claim 4, wherein said heat exchanger communicates with said plenum via a third duct member, said third duct member being formed of one of a polymer material and a metallic material.

13. A snowmobile as in claim 4, wherein said plenum is connected to said air inlet on one end thereof.

14. A snowmobile as in claim 4, wherein said plenum has an internal volume between and including 3 and 5 liters.

15. A snowmobile as in claim 2, wherein said snowmobile further comprises an exhaust system, said exhaust system being operatively connected to said turbocharger such that exhaust gas may flow from said turbocharger subsequent to said affecting the pressurization of air from the environment and through said exhaust system into the atmosphere.

16. A snowmobile as in claim 14, wherein said exhaust system includes a muffler to dissipate noise of the exhaust gas exiting said engine.

17. A snowmobile as in claim 2, wherein said air inlet is provided by a throttle body.

18. A snowmobile as in claim 2, wherein said turbocharger pressurizes the air at a sufficiently useable level for engine speeds below 3000 revolutions per minute.

19. A snowmobile as in claim 1, further comprising a continuously-variable-transmission, which is operatively coupled between said engine and said endless belt drive system and being manipulable into an engaged configuration wherein said continuously-variable-transmission transfers sufficient power between said engine and said belt drive system to effect initial movement of said snowmobile.

20. A snowmobile as in claim 19, wherein said continuously-variable-transmission is operatively connected to said engine on a side thereof opposite a side thereof that is proximate said turbocharger.

21. A snowmobile as in claim 19, wherein said continuously-variable-transmission is operatively connected to said engine on a side thereof adjacent a side thereof that is proximate said turbocharger.

22. A snowmobile as in claim 19, wherein said continuously-variable-transmission is configured such that the initial movement of said

snowmobile is effected when said engine is operating at 3000 revolutions per minute.

23. A snowmobile as in claim 19, wherein said turbocharger pressurizes the air prior to engagement of said continuously-variable-transmission.

24. A snowmobile as in claim 1, wherein said engine is of a V-twin two cylinder type engine.

25. A snowmobile as in claim 1, wherein said engine includes a plurality of cylinders and is an in-line type engine.

26. A snowmobile as in claim 1, wherein said turbocharger is disposed on a starboard side of said engine.

27. A snowmobile as in claim 1, wherein said turbocharger is disposed on a port side of said engine.

28. A snowmobile as in claim 19, wherein said plenum and said continuously-variable-transmission are disposed on a same side of said engine.

29. A snowmobile as in claim 19, wherein said plenum and said continuously-variable-transmission are disposed on a opposites sides of said engine relative to one another.

30. A snowmobile as in claim 4, wherein said plenum and said turbocharger are disposed on opposite sides of said engine relative to one another.